COASTAL CONSERVANCY

Staff Recommendation

September 17, 2026

COSMOS ADAPTS: SUPPORTING COASTAL CLIMATE RESILIENCE IN THE SOUTH COAST

26-038-01

Project Manager: Christy Kehoe

RECOMMENDED ACTION: Consideration and authorization to disburse up to $1,500,143 to the University of California Santa Cruz Center for Coastal Climate Resilience to undertake CoSMoS Adapts: Supporting Coastal Climate Resilience in the South Coast, consisting of assessing adaptation solutions to reduce the risks of coastal hazards due to storms and sea level rise, conducting regional engagement and capacity-building activities, and developing high-resolution visualization and innovative communication tools that strengthen climate resilience planning in Ventura, Los Angeles, and Orange counties.

LOCATION: Ventura, Los Angeles, and Orange Counties

EXHIBITS

Exhibit 1: Project Location Map

Exhibit 2: CoSMoS Web Platform: www.usgs.gov/cosmos

Exhibit 3: Schematic of Model Approach

Exhibit 4: Examples of Model Application

Exhibit 5: Project Letters

RESOLUTION AND FINDINGS

Staff recommends that the State Coastal Conservancy adopt the following resolution and findings.

Resolution:

The State Coastal Conservancy hereby authorizes a grant of an amount not to exceed one million five hundred thousand one hundred forty-three dollars $1,500,143 to the University of California Santa Cruz Center for Coastal Climate Resilience ("grantee") to undertake CoSMoS Adapts: Supporting Coastal Climate Resilience in the South Coast ("project"), consisting of assessing adaptation solutions to reduce the risks of coastal hazards due to storms and sea level rise, conducting regional engagement and capacity-building activities, and developing

high-resolution visualization and innovative communication tools that strengthen climate resilience planning in Ventura, Los Angeles, and Orange counties.

Prior to commencement of the project, the grantee shall submit for the review and written approval of the Executive Officer of the Conservancy (Executive Officer) the following:

1. A detailed work program, schedule, and budget.
2. Names and qualifications of any contractors to be retained in carrying out the project.

Findings:

Based on the accompanying staff recommendation and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed authorization is consistent with Chapter 3 of Division 21 of the Public Resources Code regarding addressing the potential impacts of climate change on coastal resources.
2. The proposed project is consistent with the current Conservancy Project Selection Criteria.

STAFF RECOMMENDATION

PROJECT SUMMARY

Staff recommends the Conservancy authorize a $1,500,143 grant to the University of California Santa Cruz Center for Coastal Climate Resilience (CCCR) to undertake Coastal Storm Modeling System (CoSMoS) Adapts: Supporting Coastal Climate Resilience in the South Coast (project), consisting of assessing adaptation solutions to reduce the risks of coastal hazards due to storms and sea level rise, conducting regional engagement and capacity-building activities, and developing high-resolution visualization and innovative communication tools that strengthen climate resilience planning in Ventura, Los Angeles, and Orange counties (Exhibit 1: Project Location Map).

The Southern California coast is highly developed, increasingly vulnerable to climate change, and home to communities urgently seeking cost-effective sea-level rise adaptation solutions. Coastal counties in the region contain more than 17 million residents, the largest population center in the state. Extensive development in low-lying areas exposes a significant share of the population to storms and sea-level rise that threaten critical infrastructure, public access, coastal ecosystems, and the regional economy. While many California municipalities have taken proactive steps to address escalating coastal climate impacts, other communities frequently report lacking the capacity, data, and tools needed to evaluate adaptation strategies. These challenges are even more pronounced for underserved communities and tribes, which often have fewer resources and less support for local adaptation planning or participation in state-led processes.

In the proposed project, CCCR will further develop and apply CoSMoS Adapts for Ventura, Los Angeles, and Orange Counties. CoSMoS Adapts is a public planning and visualization tool used to evaluate sea-level rise adaptation strategies, with a focus on nature-based solutions for flood-reduction benefits and cost-effectiveness. CoSMoS-Adapts builds upon the existing

Coastal Storm Modeling System (CoSMoS) originally developed by the U.S. Geological Survey (USGS) with funding support from the Conservancy in 2013 (Exhibit 2: CoSMoS Web Platform: www.usgs.gov/cosmos). CoSMoS is a modeling methodology and product suite that supports decision making by providing detailed projections of coastal flooding, erosion, groundwater hazard, and exposure under a wide range of storm and sea-level scenarios. CoSMoS is a widely-used tool with coastal planners in California, has contributed to the initial assessments of climate-driven hazard exposure for coastal communities in California, and provided support for Local Coastal Program (LCP) updates.

CoSMoS Adapts represents the next phase of the CoSMoS platform evolution, moving from identifying hazards to assessing and evaluating how adaptation strategies such as nature-based solutions can reduce future risk and exposure through scenarios that allow communities to test strategies (Exhibit 3: Schematic of Model Approach). Examples of nature-based solutions include dune and wetlands restoration, subtidal reefs, ecotone levees, and living shorelines. Although many jurisdictions broadly understand the benefits of nature-based solutions for shoreline resilience, they often do not know how to decide which are the most effective under physical conditions along the coast. CoSMoS Adapts has been developed for, and tested as, a pilot effort for the cities of Half Moon Bay, Santa Cruz, and the Ventura coastline. This work was completed under California's Fifth Climate Assessment to provide an initial planning tool for these cities. The Fifth Climate Assessment is a is a state-led initiative to understand the impacts of climate change in California and offer communities and decision-makers the tools to take action. These pilot efforts demonstrated how hazard modeling, adaptation scenarios, economic analysis, and community engagement worked together to help jurisdictions assess potential adaptation approaches along their coastline so they can move forward to the next stages of project planning (Exhibit 4: Examples of Model Application).

The proposed project includes assessing nature-based solutions for Ventura, Los Angeles, and Orange Counties and adding them to the existing CoSMoS model. By toggling off and on the nature-based scenarios, end-users throughout the three counties will change the present and future coastal hazard risks, including flooding from storms and sea level rise, and be able to visualize the effectiveness of coastal defense systems and adaptation options. For these three counties, the project will also assess adaptation effectiveness across timelines and scenarios, advance risk characterization by identifying how hazards evolve and where tipping points occur and evaluate how adaptation benefits are distributed across communities facing different levels of exposure. The project will also assess cost effectiveness of coastal adaptation solutions across the three counties, as well as co-benefits such as ecosystem services, recreation, beach access, quality of life, and social equity. CCCR will utilize the Vulnerable Communities Platform from the Governor's Office of Land Use and Climate Innovation to quantify impacts of sea-level rise on socially vulnerable populations. All of these assessments will be added to CoSMoS Adapts. CoSMoS Adapts gives a broad, regional understanding of coastal risks and adaptation options, but it cannot show the detailed design needs of any specific site. The project will partner with selected communities interested in site-specific information to develop local-scale strategies.

CCCR is developing the CoSMoS Adapts tool in partnerships with the USGS at the request of coastal planners across the State. The tool will be co-developed with these end-users through regional engagement. The project includes using the tool for capacity-building with local governments, tribes, community organizations, policymakers, practitioners, and technical experts. The project will strengthen regional capacity by providing communities and local leaders with education, professional development, and accessible decision-support tools that improve their ability to plan for coastal climate risks and evaluate adaptation options. The extensive collaboration in this project is designed to ensure adaptation scenarios and decision-support tools reflect local priorities and can directly feed into the project planning, design and implementation process. A Regional Engagement Team will facilitate two-way communication with coastal communities to ensure the project is aligned and designed with community needs in mind. This team will lead engagement events and thematic workshops covering topics such as tribal-led adaptation, nature-based solutions, finance, insurance, and state policy. CCCR will also establish an Advisory Committee, which will be a multisectoral group that will meet quarterly to guide scenario development, project direction, product design, and impact metrics, drawing on state policymakers, local practitioners, underserved groups, tribal representatives, and experts in insurance, finance, and socioeconomics. Through these collective efforts, CCCR will engage end-users across Ventura, Los Angeles, and Orange Counties including at least three tribes, ten state agencies, and approximately 250 community members. CCCR will also offer professional development to an estimated ten local leaders.

The project includes development of the visualization and communication tools that will translate the complex modeling results of CoSMoS Adapts into practical resources to help communities understand risks, evaluate adaptation options and tradeoffs, and integrate results into existing planning tools. These visualization and communication tools will be delivered via a publicly accessible website, available in Spanish. The project's data and products will be maintained beyond the life of the grant by UCSC and USGS. The website will provide an interactive decision-support tool that produces risk and adaptation visuals and assesses the effects of adaptation options based on the quantitative modeling. In addition, the photo-realistic video simulations using game-engine technology will be developed to facilitate project planning and implementation at a local scale. CCCR is also developing interactive visualization tools, working in collaboration with the University of Southern California, to give end-users the ability to rapidly test and visualize the benefits of various adaptation solutions in real time. The project includes communications about the new CoSMoS Adapts tools with broader audiences by sharing results and insights through digital outreach products such as policy briefs, newsletters, blog posts, and YouTube channel posts, and other social media.

The project also includes working with at least two local partners such as cities, counties, regional planning groups, or tribes, in Ventura, Los Angeles, and/or Orange Counties to use CoSMoS Adapts to evaluate project-specific solutions and support project-specific design. These analyses will be at a local-scale and examine the viability of nature-based solutions, including potential infrastructure realignment or relocation, that might be employed in specific locations. These options will be integrated into the CoSMoS Adapts web tool for site specific evaluation in these communities, the cost-benefit analyses summarized in a report for each community, and the results displayed in game-engine driven, augmented reality simulations to visualize the

most effective solutions and enable broad accessibility to the results. Through early outreach and engagement efforts, CCCR has already identified potential site-specific partners such as the Beach Erosion Authority for Clean Oceans and Nourishment in Ventura, the Los Angeles County Department of Beaches and Harbors in Malibu and Santa Monica Bay, and the Southern California Coastal Water Research Project in Orange County.

Site Description: The proposed project is relevant to locations throughout the coastal zone of Ventura, Los Angeles, and Orange Counties.

Grant Applicant Qualifications: CCCR brings deep expertise in coastal research, policy, and practice to help communities and decision makers adapt to climate change and respond to coastal hazards across California. CCCR and USGS have partnered for more than a decade, successfully applying the CoSMoS and CoSMoS Adapts frameworks for hazard modeling, neighborhood-scale adaptation evaluations, and expertise in nature-based solutions. CCCR specializes in climate resilience, particularly using nature-based solutions that reduce coastal risks, developing effective communication tools that help communities understand climate impacts, and assessing adaptation options that address climate vulnerability. CCCR has strong capacity to manage California state grants and deliver multi-year coastal resilience projects. The team has an extensive track record administering major federal, state, county, and nonprofit grants including past awards from the Conservancy, the Ocean Protection Council, and the California Natural Resources Agency.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA

The proposed project is consistent with Conservancy's Project Selection Criteria, last updated on September 23, 2021, in the following respects:

Selection Criteria

1. **Extent to which the project helps the Conservancy accomplish the objectives in the Strategic Plan.**

See the "Consistency with Conservancy's Strategic Plan" section below.

2. **Project is a good investment of state resources.**

This project delivers high-quality decision-making assessments for municipalities across Ventura, Los Angeles, and Orange Counties and provides outreach tools that strengthen preparedness for flooding, erosion, storm impacts, and other coastal-hazard risks. The work advances statewide sea-level-rise mandates by supporting consistent region-wide and statewide planning such as Senate Bill 272 Sea-Level Rise: Planning and Adaptation (Chapter 384, Statutes of 2023). The project strengthens at least three Local Coastal Program updates and partners with at least two municipalities. It also aligns with state policies and regional plans such as the California Natural Resources Agency's 2024 California Climate Adaptation Strategy, the Ocean Protection Council's 2024 State of California Sea-Level Rise Guidance, and California's Fifth Climate Assessment. The project supports these frameworks by incorporating science-based planning, consistent hazard projections, and expanded use of nature-based adaptation. CCCR coordinates with the Governor's Office Vulnerable Communities Platform to

support social-vulnerability assessments and policy-relevant products for South Coast communities.

3. Project includes a serious effort to engage tribes. Examples of tribal engagement include good faith, documented efforts to work with tribes traditionally and culturally affiliated with the project area.

Tribal involvement is an essential component of this project, and the project team is committed to working directly with interested tribes to co-develop CoSMoS Adapts in ways that advance and strengthen tribal coastal resilience. CCCR will work with interested tribes in project activities to address tribal priorities in the development of the modeling tools and the final products. CCCR will incorporate traditional ecological knowledge that has been shared by tribes, and will shape project products such as hazard maps, adaptation scenarios, and visualizations to directly reflect tribal needs. The first step in tribal involvement will be one-on-one conversations with interested tribes to share information about the project and offer multiple ways for tribes to participate. Further engagement opportunities will include listening sessions and interactive meetings to gather input on tribal priorities. There will also be opportunities for tribes to participate in a deeper level on advisory committees for the project if there is interest. Funding will be provided for travel and honoraria, so resource-limited tribes are fully able to participate.

4. Project benefits will be sustainable or resilient over the project lifespan.

The project delivers durable, climate-resilient benefits for South Coast communities by using a modeling framework that aligns with evolving scientific guidance, ensuring hazard and adaptation scenarios remain relevant over time. Data and tools generated through the project will be maintained beyond completion through long-standing commitments from UCSC and USGS to preserve public datasets and products, including the CoSMoS Adapts platform and visualization tools hosted by CCCR and USGS. Ongoing collaboration with state agencies ensures coastal-hazard modeling and adaptation planning remain consistent with statewide policy. The project enhances long-term resilience by evaluating a wide range of nature-based, hybrid, and engineered coastal adaptation solutions across multiple climate scenarios and time horizons, helping communities invest in strategies that are sustainable, cost-effective, and aligned with local values.

5. **Project delivers multiple benefits and significant positive impact.**

The project provides significant environmental, social, and economic benefits by improving coastal-hazard preparedness for communities in the South Coast. It delivers actionable modeling and planning information to support resilience to flooding, erosion, storm impacts, and other hazards. The project helps state and local agencies advance nature-based and hybrid coastal adaptation strategies that support compliance with statewide sea-level-rise planning requirements such as Senate Bill 272 (Chapter 384, Statutes of 2023). Evaluating approaches such as dune and wetland restoration and beach nourishment generates co-benefits including habitat enhancement, improved water quality, expanded recreation, quality of life, social equity, and public access. Accessible decision-support tools and local-scale visualizations

empower communities across Ventura, Los Angeles, and Orange Counties to evaluate adaptation options, support informed decision-making, and reduce long-term planning costs.

6. Project planned with meaningful community engagement and broad community support.

This project is grounded in sustained community engagement across Ventura, Los Angeles, and Orange Counties to ensure the work reflects local needs and priorities. The project builds on listening activities and pilot work conducted under California's Fifth Climate Assessment in Half Moon Bay, Santa Cruz, and Ventura. Community partners help shape adaptation scenarios and inform technical products and visualizations. The Regional Engagement Team facilitates cross-sectoral group with listening sessions, interactive workshops, webinars, product beta-testing, and bilingual outreach, with both virtual and in-person participation options. A multisector Advisory Committee with state and regional representatives guides scenario development, project direction, product design, and evaluation metrics. Workforce and leadership development opportunities, including topical workshops and scholarships to the UCSC Professional Development Course, strengthen long-term regional capacity. The proposed project is supported broadly by an elected official, public agencies, and the community including the California Department of Insurance, Beach Erosion Authority for Clean Oceans and Nourishment, the County of Los Angeles Department of Beaches and Harbors, and the Orange County Coastkeeper (Exhibit 5: Project Letters).

PROJECT FINANCING

Coastal Conservancy	**$1,500,143**
Others (UCSC CCCR, AXA Research Fund)	$360,000
Project Total	**$1,860,143**

The anticipated source of Conservancy funding for this project is an appropriation of the Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024, also known as the 2024 Climate Bond or Proposition 4 (Public Resources Code (PRC) Section 90000-95015). Section 92010 authorizes the Conservancy to provide grants to protect, restore, and increase the resilience of beaches, bays, coastal dunes, wetlands, coastal forests, watersheds, trails, and public access facilities. Eligible projects include those that protect coastal lands, and those that are natural infrastructure projects that use existing natural areas to minimize coastal flooding, erosion, and runoff (PRC section 92010(a)(1); 92010(a)(2)). The term "protection" includes restoration, preservation, and site monitoring as well as "those actions necessary to prevent harm or damage to persons, property, or natural, cultural, and historic resources, actions to improve access to public open-space areas, or actions to allow the continued use and enjoyment of property or natural, cultural, and historic resources" (PRC Section 90100(h)).

The project is consistent with this funding source because it will develop a public planning and visualization tools to evaluate nature-based, sea-level rise adaptation projects for flood-reduction benefits and cost-effectiveness along the coastlines of Ventura, Los Angeles, and Orange counties.

The project leverages $360,000 in other funding support from UCSC CCCR and the AXA Research Funding, covering project management and engagement, and visualization development tasks.

Unless specifically identified as "Required Match," the other sources of funding and in-kind contributions described above are estimates. The Conservancy does not typically require matching funds or in-kind services, nor does it require documentation of expenditures from other funders or of in-kind services. Typical grant conditions require grantees to provide any funds needed to complete a project.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION

The proposed authorization is consistent with Division 21 of the Public Resources Code, specifically Chapter 3, Section 31113.

Sections 31113(a) and 31113(b) authorize the Conservancy to undertake projects that address the impacts of climate change on coastal resources, including extreme weather, sea level rise, bluff and beach erosion, and flooding. Section 31113(c) authorizes the Conservancy to award grants for the purposes authorized under 31113(b). Consistent with these provisions, the project will create modeling tools that will enable users to understand adaptation options for addressing coastal hazards and sea level rise.

Section 31113(c) requires the Conservancy to prioritize projects that maximize public benefits and that achieve other specified goals, including those that use natural infrastructure for adaptation in coastal communities. Consistent with this provision, the proposed project maximizes public benefits by providing communities with publicly accessible tools and data that support coastal resilience planning and can improve local capacity to make informed decisions about sea-level rise and storm impacts. The project will enable protection of communities using natural infrastructure to reduce flood risk by modeling future storm and sea-level rise scenarios, evaluating a range of adaptation strategies including nature-based solutions, and identifying the most effective solutions for reducing hazards such as storm surge, coastal flooding, and erosion across Ventura, Los Angeles, and Orange Counties.

CONSISTENCY WITH CONSERVANCY'S 2023-2027 STRATEGIC PLAN

Consistent with **Goal 4.1 Sea Level Rise Adaptation Projects**, the proposed project will strengthen coastal resilience by assessing adaptation strategies for Ventura, Los Angeles, and Orange Counties and creating the modeling and visualization tools that directly support communities in these counties in planning for future sea-level rise impacts.

Consistent with **Goal 4.3 Multi-benefit Nature-Based Climate Adaptation**, the proposed project will evaluate and compare multiple nature-based and hybrid adaptation strategies such as dune restoration, wetlands, hybrid reefs, and green levees and quantify their co-benefits and cost-effectiveness for the region.

CEQA COMPLIANCE:

The proposed project is categorically exempt from review under the California Environmental Quality Act (CEQA) pursuant to 14 Cal. Code of Regulations (CCR) Section 15306, which exempts "basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource." The proposed project includes data collection, analysis, and planning, all of which will not result in a serious or major disturbance to an environmental resource.

Additionally, the proposed project is statutorily exempt from CEQA pursuant to CCR Section 15262, which exempts projects that are feasibility or planning studies for possible future actions that have not yet been approved, adopted, or funded. Consistent with this section, the project includes planning studies for potential future projects that have not yet been approved, adopted, or funded.

Upon approval, staff will file a Notice of Exemption for the project.